

I claim:

1. A system for measuring an ability of a subject, comprising:

5 a first set of task items that require the subject to provide one or more spoken responses;

a speech recognition system coupled to receive the spoken response and to provide an estimate of the spoken response, the speech recognition system having an associated accuracy;

a scoring device, the scoring device being operable to convert the estimate into an item score; and

10 a computation device, the computation device providing a subject score based on a combination of item scores using a scoring computation model that depends upon an expected item-dependent operating characteristic of the speech recognition system.

15 2. A system as claimed in claim 1, wherein the scoring computation model is based on Item Response Theory.

3. A system as claimed in claim 1, wherein the speech recognition system, the scoring device and the computation device comprise software modules running on a general purpose computing platform.

20 4. A system as claimed in claim 1, wherein the scoring computation model is constructed from a plurality of responses provided by a number of native and non-native speakers, the plurality of responses being prompted by a second set of task items.

5. A system as claimed in claim 1, wherein the estimate provided by the speech recognition system comprises an estimate of the linguistic content of the spoken response.

6. A system as claimed in claim 1, wherein at least one task in the first set of tasks is an item selected from the group consisting of a prompt to read a sentence aloud, a prompt to repeat a word, a prompt to repeat a phrase, to repeat a sentence, a prompt to provide an opposite, and a prompt to answer a question.

7. In a computer-based system that grades spoken responses to a set of task items, wherein the system comprises a speech recognition system, an improved method of grading the spoken responses, the improvement comprising:  
determining a subject score for the spoken responses to the set of task items, wherein the subject score accounts for an ability of the speech recognition system to accurately recognize the spoken responses.

8. A method for measuring an ability of a subject, comprising:  
providing a set of task items;  
generating a difficulty value for each task item in the set, the difficulty value being based upon the task item and a performance measurement associated with an automatic device that measures task performance;  
obtaining a response to each task item from the subject; and  
combining the difficulty values and the responses to form a subject score.

9. A method as claimed in claim 8, wherein the performance measurement is a measure of an ability of the automatic device to accurately recognize the responses.

10, A method as claimed in claim 8, wherein the step of generating a difficulty value comprises the step of obtaining a plurality of sample responses from a group of sample speakers.

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11. A method as claimed in claim 10, wherein the step of generating a difficulty value further comprises the step of applying a statistical model to the plurality of sample responses.

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12. A method as claimed in claim 8, wherein the step of combining the difficulty values and the responses comprises the step of applying a statistical model to the plurality of responses.

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13. A method as claimed in claim 8, wherein the performance measurement associated with the automatic device is based upon an operating characteristic of a speech recognition system.

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14. A method for measuring an ability of a subject comprising:  
providing a set of tasks and a device that automatically measures performance of the tasks;

determining a difficulty value for each task, wherein the difficulty value is based upon the task and upon a performance measure associated with an ability of the automated device to accurately assess performance of the task;

obtaining verbal responses to the tasks from the subject; and

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combining the verbal responses and the difficulty values to form a subject score.

15. A method as claimed in claim 14, wherein the device comprises an automated speech recognition system.

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9.4~~ 16. An apparatus for determining a difficulty value of items in a test, comprising:  
a set of responses to the items from a number of individuals;  
an automated grader, wherein the automatic grades receives the set of responses and  
provides graded responses; and

10 means for reducing the graded responses to a set of item difficulties said item  
difficulties reflecting an ability of the automatic grader to accurately grade the set of  
responses.

15 17. A method for determining a difficulty value of items in a text, comprising:  
obtaining a set of responses to the items from a number of individuals;  
automatically grading the set of responses, thereby generating graded responses; and  
reducing the graded responses to a set of item difficulties, said item difficulties  
including a measurement of accuracy for the act of automatically grading the set of responses.